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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/783,269 | 02/20/2004 | Jeffrey E. Ungar | 156900-0025 (P009) | 7329 |
| 1622 | 7590 | 09/20/2005 | EXAMINER | |
| IRELL & MANELLA LLP 840 NEWPORT CENTER DRIVE SUITE 400 NEWPORT BEACH, CA 92660 | | | VY, HUNG T | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2821 | |

DATE MAILED: 09/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/783,269

Applicant(s)

UNGAR ET AL

Examiner

Hung T. Vy

Art Unit

2821

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on the response filed on 08/08/2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. As of entry of response dated 8/08/2005, claims 1-14 are pending in this application.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --
A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

35 U.S.C. § 102(e), as revised by the AIPA and H.R. 2215, applies to all qualifying references, except when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. For such patents, the prior art date is determined under 35 U.S.C. § 102(e) as it existed prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. § 102(e)).

3. Claims 1-14 are rejected under 35 U. S. C. § 102 (e) as being anticipated by Evans et al., U.S. Patent. No. 6,853,666.

Claims 1, 3, 6, 8, 11 and 13, Evans et al. disclose a semiconductor laser and a method for operating a semiconductor laser, comprising: a first optical gain element 1402 that generates a first light beam having a first optical frequency; a second optical gain element 1402 that generates a second light beam having a second optical frequency (See fig. 14 or see column 11, line 56-61); an optical frequency mixer 3 includes a waveguide optically (See column 11, line 60) that is coupled to said first 1402 and second gain elements 1402 and generates a polarization wave at a third optical

Art Unit: 2821

frequency; and near-field phase grating 8 that couples a power from the polarization wave to an electromagnetic wave propagating at the third optical frequency (See fig. 1,2 or 14).

Claims 2, 7 and 12, Evans et al. disclose different kind of wavelength depend on the grating 8 (See column 4, line 30-58) so it is inherent Evans et al. disclose the third optical frequency is in the mid-infrared, long-infrareads or terahertz regions.

Claims 4, 9 and 14, Evans et al. disclose the electromagnetic wave propagates in a direction essentially perpendicular to a propagation direction of the first and second light beams (See column 5, line 62-67).

Claims 5, and 10 Evans et al. disclose the semiconductor laser is fabricated with group III-V material (See column 13, line 53-55).

4. Claims 1, 3, 6, 8, 11 and 13 are rejected under 35 U. S. C. § 102 (b) as being anticipated by Uchida, U.S. Patent. No. 5,757,832.

Claims 1, 3, 6, 8, 11 and 13, Uchida discloses a semiconductor laser and a method for operating a semiconductor laser, comprising: a first optical gain element that generates a first light beam having a first optical frequency; a second optical gain element that generates a second light beam having a second optical frequency (See fig. 16); an optical frequency mixer includes a waveguide optically 504a (See fig.16) that is coupled to said first and second gain elements and generates a polarization wave at a third optical frequency; and near-field phase grating 503 that couples a power from the polarization wave to an electromagnetic wave propagating at the third optical frequency (See fig. 2 or 16).

Response to Arguments

5. Applicant's arguments filed on 08/08/2005 have been fully considered but they are not persuasive. Applicant made the following arguments:

a. "Evans does not disclose a semiconductor laser with two different optical gain elements that generate light beams having different frequencies.

Additionally, Evans does not disclose the frequency mixer to mix the two different frequencies to produce a polarization wave at a third optical frequency. Finally, Evans does not disclose a grating that couples power from the polarization wave to an electromagnetic wave propagating at the third frequency as recited in the claims. Evans does not disclose an of those a grating couples power from the polarization wave to an electromagnetic wave propagating at the third frequency as recited in claims" page 5, second paragraph.

b. "Uchida does not disclose creating light beams of different frequencies, mixing the beams to crate a polarization wave of a third frequency and then coupling the power of the polarization wave to an electromagnetic wave with a grating as recited by the claims of the above entitled application. " page 5, fourth full paragraph.

In response to Applicant's argument a above, the Applicant's arguments are not persuasive because Evans disclose a semiconductor laser with two different optical gain elements that generated light beams having different frequencies (see column 8, line 53-64). Additionally, what are the different between the frequency mixer on claimed invention and the frequency mixer 3 as a waveguide optically as Evans's teaching? The

Art Unit: 2821

drawing is not support for claims and the applicant's argument. Where is the frequency mixer in the drawing that support for claim. Finally, Evans disclose a grating 8 that coupled power from the polarization wave to an electromagnetic wave propagating at the third frequency (See fig. 1). Consequently, Evans does anticipate the claims of the above-entitled application.

In response to Applicant's argument **b** above, the Applicant's arguments are not persuasive because Uchida discloses the two-gain region that are electrically independent form each other (See column 7, line 30-36) so with different current control on the gain region, the grating 207 in the gain region will generate with different frequency and wavelength. Uchida disclose mixing (lossy region or phase control region, wavelength control region) beam of different frequency to create a polarization wave of a third frequency (See fig. 13).

Conclusion

5. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

Art Unit: 2821

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung T. Vy whose telephone number is 571-2721954.

The examiner can normally be reached on 8.30am - 5.30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong can be reached on 571 272 1834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Hung T. Vy
Art Unit 2821
September 5, 2005.


WILSON LEE
PRIMARY EXAMINER